Career Academy Integrated Unit Plan

Academy Name: _____STEM_____ **School: University High School____**
Date Created: _06/15/2011_____ **Created by: _Steve Perri_____**

Integrated Unit Plan Title: Engineering
Courses to integrate: Engineering, Geometry, Chemistry
Grade Level:10, 11
Timeline & Duration:4 quarters

Unit Summary: This unit will cover the combined Gas laws: Charles's Law & Boyle's Law and Gay-Lussac's Law. It will be the student's job to describe if there is any relation to the laws and the system (rocket).

Overview of Activities/Lessons per Course				
Course	Principals of Engineering (POE)	Chemistry	Geometry/Trigonometry	
Activity/Lesson	Bottle Rocket	Charles's Law & Boyle's Law and Gay-Lussac's Law comparison to rocket system	Calculation of altitude	
Activity/Lesson				

Lesson Instructions for __Bottle Rocket_____ (course): Principals of Engineering

Standards (Performance Tasks or Course Frameworks or Sunshine State Standards):
Rigor & Relevance (quadrant): D - Adaptation

Instructions to Teacher: On the Web site http://www.tclauset.org/21_BtlRockets/BTL.html there are three short videos that demonstrate the building of this project. The rocket is to be built in stages. Students will only begin building after the teacher has demonstrated each stage of the building process. Another useful website that demonstrates how to make the parachute is “Mr. Hayhurst's Quick and Easy Bottle Rocket**”** at http://www.lnhs.org/hayhurst/rockets/. On launch day, students will record the height of rocket flight by calculating the tangent of the angle measured.
Instructions to Students: Students will bring to class (2) 2 liter soda bottles and (1) plastic folder
Instructions for Student Accommodations: Students needing accommodations will be given extra time to complete the project.
Assessment for Activity: Rocket will be fired in outdoor supervised environment. Points awarded for successful launch, maximum points for successful parachute deployment.
Approximate Length of Time for Activity: 2 weeks, 3 weeks from start to launch; this allows 1 extra week for those needing accommodations.
Materials Needed: (2) 2 liter soda bottles and (1) plastic folder, strapping tape, scissors
Resources Needed: Air compressor, air hose, bottle rocket launcher, and water
Attachments: Web site http://www.tclauset.org/21_BtlRockets/BTL.html **Web site**